

## DIVERSITY OF *FICUS* L. (MORACEAE) AND ITS USES IN SIKKIM HIMALAYAS (INDIA)

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### ABSTRACT

*The paper deals with diversity and uses of various aspects in the field of medicine, artifacts, livelihood, folklore and ethnobotany of genus Ficus occurring within the state of Sikkim Himalayas. A list of different types of Ficus species found in Sikkim has been prepared. A total of 115 taxa have been categorised out of which 36 species have been recorded in Sikkim according to the accessible information and published records. Ficus species plays an important role in supporting the lives of common people by providing edible products, as fodder, medicine and as religious value. All the species provided with their nomenclature, taxonomy, synonyms, distribution and uses has been examined.*

**KEYWORDS:** Diversity, Ficus, Fodder, Medicine & Sikkim

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### 1. INTRODUCTION

*Ficus* L. is the largest genus of Moraceae family, it has a total of 755 species worldwide (Corner, 1958, 1960, 1965 and Berg & Corner, 2005). The genus has been classified into six subgenera, 19 sections and 27 subsections based on morphological features and distributional pattern (Ramirez, 1977; Berg & Corner, 2005).

King (1887-88) was the first to give systematic account of the Indian *Ficus* in which he had recorded 113 species and 47 infraspecific taxa from whole British India out of which only 75 species and 16 infraspecific taxa were reported from India (King, 1888). Recently, the genus has been classified into six genera, 19 sections and 27 subsections based on morphological features and distributional pattern (Gamble, 1972; Ramirez, 1977 and Berg & Corner, 2005).

In India, there are 115 species were distributed throughout the region, out of 115 only 10 are endemic (Flora of China, 2003). The species available in the North- East region shows resemblance with Chinese Region while the species of the Peninsular region and Andaman and Nicobar Islands (Duthie, 1915; Flora of China, 2003; Pandey & Diwakar. 2008). There are 36 *Ficus* species reported from Nepal (Kunwar & Bussmann, 2006). 99 *Ficus* species, 16 endemic, 2 introduced from China (Flora of China, 2003), 54 *Ficus* species from Andaman-Nicobar Island (Pandey & Diwakar. 2008; Tiwari, *et. al.*, 2014). The north-east region may be considered as the Hotspot region of India for the genus *Ficus* L. because it alone consists of about 43 *Ficus* species, which is highest among all Indian states (Chaudhary *et. al.*, 2012).

Sikkim lies in the North-Eastern part of India, bordered by Tibet in the north, Bhutan in the east, Nepal in the west and West Bengal in the south. Sikkim has an altitude range from 280 meters in the South at the border with West Bengal to 8,586 meters in the Northern peaks near Nepal and Tibet. It has a total area of 7,096 Km<sup>2</sup>. The *Ficus* species plays an important role to support the lives of the common people, such as a fodder, religious model,

food, medicine and yields many products. *Ficus* is commonly known as fig. It plays an important role to maintain the food chain in the ecosystem. The single fig tree can act as a habitat for many birds, insects etc.

## 2. MATERIALS AND METHODS

The study was based on our Primary data (field survey and herbarium examination) and extensively on secondary data (published and unpublished literature). The altitude of the study site ranged from 300m-2900m.

## 3. RESULTS

There are 115 taxa distributed in India, and a total of 36 species has been recorded in Sikkim. The *Ficus* recorded in Sikkim are found at an altitude range of 300m (Tropical zone) to 2900 m (Temperate zone). It provides a large area of shades because of its large size, long lived, for beautification and because its religious value it is planted and conserved. It is conserved mainly in sacred grooves because of its religious values. It also provides habitat, food and shade to many organisms which lead to the conservation of biodiversity and ecological balance. Some of the species are long lived and large in size due to which some of the conserved area acts as heritage sites.

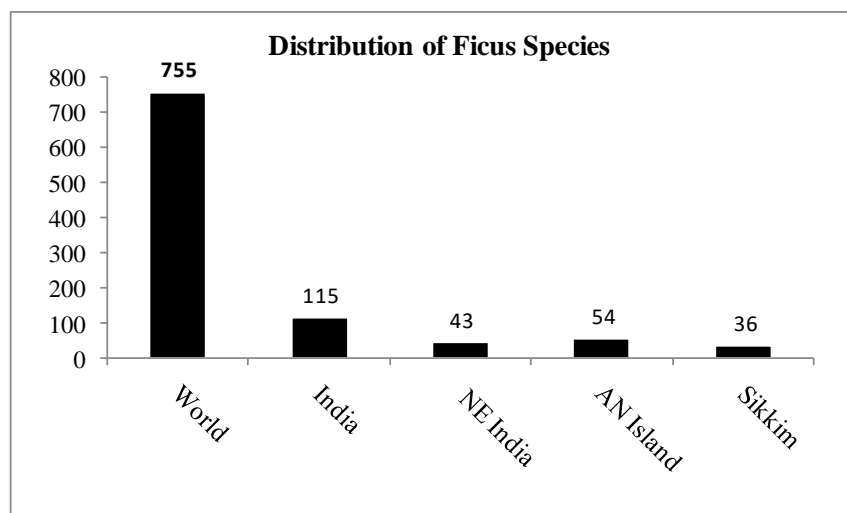


Figure 1: Distribution of Ficus Species: (Corner, 1965; Berg & Corner, 2005; Chaudhary et. al., 2012, Flora of China, 2003, Tiwari et al., 2014 and Kunwar & Bussmann, 2006).

Table 1: List of Subgenus Species of Ficus

S. No	Subgenus <i>Urostigma</i> (Gasparrini) Miq.
1	<i>Ficus geniculata</i>
2	<i>Ficus virens</i>
3	<i>Ficus concinna</i>
4	<i>Ficus religiosa</i>
5	<i>Ficus hookeriana</i>
6	<i>Ficus rumphii</i>
7	<i>Ficus elastic</i>
8	<i>Ficus drupaceae</i> var. <i>pubescens</i>
9	<i>Ficus altissima</i>
10	<i>Ficus glaberrima</i>
11	<i>Ficus maclellandii</i>
12	<i>Ficus microcarpa</i>
13	<i>Ficus curtipes</i>
14	<i>Ficus benjamina</i> var. <i>nuda</i>

15	<i>Ficus benghalensis</i>
16	<i>Ficus arnottiana</i>
<b>Subgenus <i>Pharmacosycea</i> (Miq.) Miq.</b>	
1	<i>Ficus nervosa</i>
<b>Subgenus <i>Sycomorus</i> (Gasparrini) Miq.</b>	
1	<i>Ficus auriculata</i>
2	<i>Ficus squamosa</i>
3	<i>Ficus hispida</i>
4	<i>Ficus fistulosa</i>
5	<i>Ficus racemosa</i>
<b>Subgenus <i>Ficus</i></b>	
1	<i>Ficus subincisa</i>
2	<i>Ficus nerifolia</i>
3	<i>Ficus hirta</i>
<b>Subgenus <i>Sycidium</i> (Miq.) Miq.</b>	
1	<i>Ficus semicordata</i>
2	<i>Ficus prostrate</i>
3	<i>Ficus heterophylla</i>
4	<i>Ficus cyrtophylla</i>
5	<i>Ficus subulata</i>
6	<i>Ficus tinctoria</i>
<b>Subgenus <i>Synoecia</i> Miq. Ex Mildbread &amp; Burret</b>	
1	<i>Ficus hederaceae</i>
2	<i>Ficus sagittata</i>
3	<i>Ficus pubigera</i> var. <i>maliformis</i>
4	<i>Ficus pumila</i>
5	<i>Ficus sarmentosa</i>

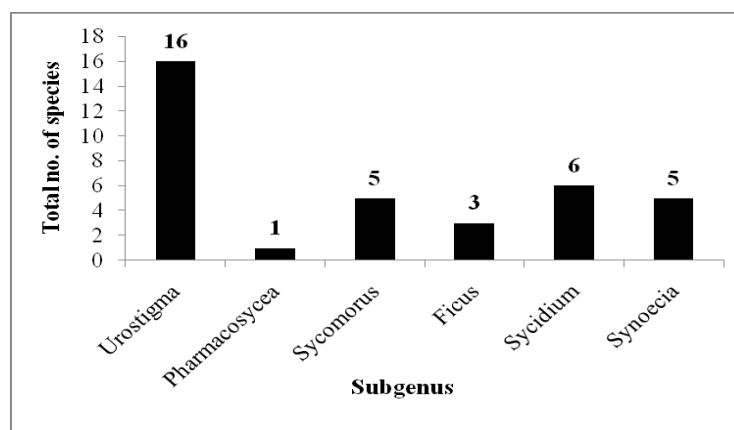


Figure 2: Total Number of Species (Subgenus wise).

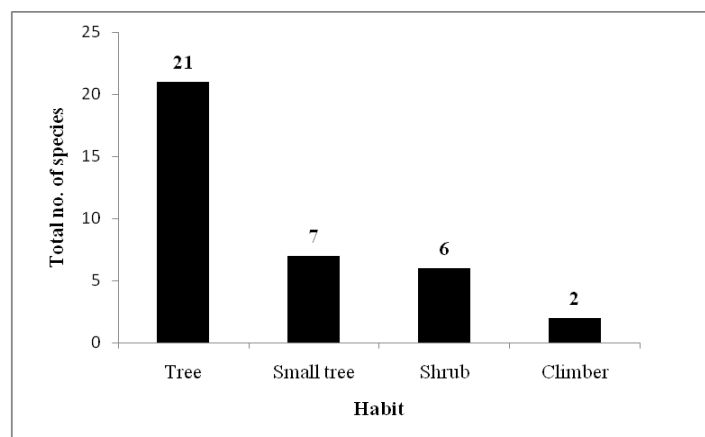


Figure 3: Total Number of Species (Habit wise).

#### 4. ENUMERATION OF *FICUS* SPECIES

##### 1. *Ficus semicordata* Buch. Ham. ex Sm

**Common name:** Drooping Fig, Wedge leaf fig (English); Khaniyu (Nepali); Tunzi Kung (Lepcha).

**Synonyms:** *Ficus cunia*, *Covellia conglomerate*, *Covellia inaequiloba*, *Ficus conglomerate*, *Ficus hapalophylla* and *Tremotis cordata*.

**Habit:** Tree

**Distribution:** India (Sikkim), China, Vietnam, Malaysia, Myanmar, Thailand, Nepal, Bhutan (Flora of British India, 1872-75; Flora of Bhutan, 1983; Adrian & Storrs, 1998; Flora of China, 2003; Tamang & Yonzon, 2004; Sundriyal *et al.*, 2004; Polunin & Stainton, 2006; Kumar, *et al.*, 2011; Rai *et al.*, 2018).

**Uses:** Fruit are edible (Hedrick, 1972; Manandhar, 2002; Sundriyal, *et al.*, 2004; Kumar *et al.*, 2011). It has sweet-sour flavor (Flora Malesiana, 2006). *Ficus semicordata* is used as fodder and are edible (Singhm, 1968; Rana & Shrestha, 1978; Bajracharya, *et al.*, 1982; Kapali, S.K. 1992; Bhatta, 1999; Rajbhandary & Dhakal. 2003; Shrestha & Kunwar 2003; Kumar, *et al.*, 2011). The juice of the root treats headache, fever and menstrual disorder and immature fruit treats constipation and fruit paste used for headache (Manandhar, 2002). The juice from the roots is given in bladder complaints and visceral obstructions (Kirtikar & Basu, 2001, Murugan, *et al.*, 2013).

##### 2. *Ficus subincisa* Buch.-Ham. ex Sm.

**Common name:** Lutey khaneu (Nepali), Sayeh kung (Lepcha).

**Synonyms:** *Ficus caudate*, *F. clavata*, *F. subincisa* var. *paucidentata* and *F. trachycarpa* var. *paucidentata*.

**Habit:** Small Tree

**Distribution:** North East India, Sikkim, China, Laos, Myanmar, Thailand, Vietnam, Nepal, Bhutan (Adrian & Storrs, 1998; Flora of China, 2003; Tamang & Yonzon, 2004).

**Uses:** The fruits are edible. It is used as fodder and fuel wood and also used as several medicinal properties (Kapali, S.K. 1992; Chan, *et al.*, 2017). The fermented and dried leaves are used as tea leaf by Lepcha tribe in Sikkim.

### 3. *Ficus neriifolia* Sm.

**Common name:** Dudhilo, Dudhe (Nepali); Shyeet kung (Lepcha).

**Synonyms:** *Ficus fieldingii*; *F. gemella*; *F. nemoralis*; *F. nemoralis* var. *fieldingii*; *F. nemoralis* var. *gemella*; *F. nemoralis* var. *trilepis*; *F. neriifolia* var. *fieldingii*; *F. neriifolia* var. *nemoralis*; *F. neriifolia* var. *trilepis*; *F. trilepis*; *F. wardii*.

**Habit:** Tree

**Distribution:** India (Sikkim, Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland and Uttar Pradesh), China, Myanmar, Bhutan and Nepal, (Adrian & Storrs, 1998; Flora of China, 2003; Tamang & Yonzon, 2004; Chaudhary *et al.*, 2012; Rai *et al.*, 2018).

**Uses:** The fruits are edible. Its foliage is used as fodder and its wood used as fuel (Kapali, S.K. 1992; Singhm, 1968; Manandhar, 2002; Panthi and Chaudhary, 2003). In Buddhist, it is used during cremation by the monks.

### 4. *Ficus hookeriana* Corner

**Common name:** Nevara (Nepali), Kun-dhong kung (Lepcha)

**Synonyms:** *Ficus hookeri*.

**Habit:** Tree

**Distribution:** North East India, Sikkim, India, China, Nepal and Bhutan (Flora of China, 2003; Sundriyal *et al.*, 2004).

**Uses:** The Fruits are edible (Sundriyal *et al.*, 2004). The plant is widely used as a fodder. The leaves are used for packing homemade commercial products like butter, cheese, nakema (Fermented soya bean), by the local farmer of Sikkim.

### 5. *Ficus elastic* Roxb. Ex Hornem

**Common name:** Labarey (Nepali), Ayok kung (Lepcha)

**Synonyms:** *Ficus cordata*; *F. skytinodermis*; *F. taeda*; *Urostigma circumscissum*; *U. elasticum*; *U. karet*; *U. odoratum*.

**Habit:** Tree

**Distribution:** North India, Sikkim, China, Indonesia, Malaysia, Myanmar, Nepal and Bhutan (Flora of China, 2003; Tamang & Yonzon, 2004; Tiwari, *et al.*, 2014; Rai *et al.*, 2018).

**Uses:** This species is cultivated as a house plant around the world. In China, it was also formerly a source of rubber (Flora of China, 2003). It contains polyphenolic compounds, antimicrobial and anthelmintic properties due to which it is used as anti-inflammatory and antioxidant (Phan Van Kiem *et al.*, 2012).

### 6. *Ficus benjamina* L

**Common name:** Golden fig, Java fig, (English); Sami, Sarane, Swami, (Nepali)

**Synonyms:** *Urostigma nudum*; *Ficus benjamina* var. *comosa*; *F. comosa*; *F. nuda*; *U. benjaminum* var. *nudum*.

**Habit:** Tree

**Distribution:** North East India, Sikkim, China, Myanmar, Thailand, Vietnam, New Guinea, Philippines, Nepal and Bhutan (Flora of China, 2003; Tamang & Yonzon, 2004; Sundriyal *et al.*, 2004; Tiwari, *et al.*, 2014; Rai *et al.*, 2018).

**Uses:** Plants is used in ceremonial and as fodder (Singhm, 1968; Thapa, *et al.*, 1997). Leaf juice acts as flea and bug repellent (Shrestha, 1985). Latex is applied on boils (Kunwar & Bussmann, 2006). It is used as an ornamental plant. Leaves are also used for the several rituals or festival in Hindu religions.

## 7. *Ficus virens* Aiton

**Common name:** White fig, sour fig, grey fig, (English); Pakar (Nepali)

**Synonyms:** *Ficus caulobotrya* var. *fraseri*; *F. glabella*; *F. saxophila* var. *sublanceolata*; *F. virens* var. *sublanceolata*; *F. wightiana*; *Urostigma fraseri*; *U. infectarium*; *U. wightianum*.

**Habit:** Tree

**Distribution:** India, Sikkim, China, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Vietnam, Sri Lanka, Nepal, Bhutan, and North Australia (Flora of Bhutan, 1983; Flora of China, 2003; Sundriyal *et al.*, 2004; ENVIS, 2011).

**Uses:** Foliage buds are eaten as vegetable and as pickle (Sundriyal *et al.*, 2004; Siwakoti, *et al.*, 1996). Used as fodder plant, leave used as poultice (Kapali, S.K. 1992; Murugan, *et al.* 2013).

## 8. *Ficus religiosa* L

**Common names:** Peepal tree (Nepali), Tongiyar (Lepcha)

**Synonyms:** *Urostigma religiosum*.

**Habit:** Tree

**Distribution:** North India, Sikkim, China, Nepal, Pakistan and cultivated throughout tropical regions (Adrian & Storrs, 1998; Flora of China, 2003; Tamang & Yonzon, 2004; Polunin & Stainton, 2006; Singh, 2007, Rai *et al.*, 2018).

**Uses:** Fruits are edible, plant is used in ceremonial, it acts as avenue tree and use as fodder, fuel wood and also has several medicinal properties which can be used in asthma, cough, bleeding, sexual disorders, cuts, wounds, paralysis, diabetes, haematuria, diarrhea, earache, toothache, eye troubles, migraine, gonorrhea, scabies and gastric problems and it also used as antiseptic astringent and antidote (Jain *et al.*, 1991, Terson and Clinch, 1993; Joshi & Joshi, 2000; ENVIS, 2011; Murugan, *et al.* 2013; Chan, *et al.*, 2017).

## 9. *Ficus rumphii* Blume

**Common name:** Golden Rumph's Fig (English), Kathepipal, Paharepipal, Pakar (Nepali);

Synonyms: *Ficus cordifolia*; *Urostigma rumphii*.

**Habit:** Tree

**Distribution:** India, Sikkim, China, Thailand, Vietnam Indonesia, Malaysia, Myanmar, Nepal and Bhutan (Flora of China, 2003; Adrian & Storrs, 1998).

**Uses:** The fruits are edible ((Murugan, *et.al.* 2013). It is used as fodder (Kumar *et al*, 2011; Murugan, *et. al.* 2013). Treatment of Foot and mouth disease of cattle by feeding (Manandhar, 2002).The fruit juice mixed with turmeric, pepper and ghee is given internally to kill worms and in asthma. The plant is used to treat snake bite, to treat worms and asthma (Kirtika & Basu, 2001; Murugan, *et. al.* 2013).

#### 10. *Ficus drupacea* Thunb

**Common name:** Brown- wolly fig (English).

**Synonyms:** *Ficus mysorensis* var.*pubescens*; *F. citrifolia*, *F. gonia*; *F. mysorensis*; *Urostigma dasycarpum*; *U. mysorensis*.

**Habit:** Tree

**Distribution:** India, Sikkim, China, Bangladesh, Laos, Myanmar, Sri Lanka, Vietnam, Nepal and Bhutan (Flora of China, 2003; Chaudhary *et. al.*, 2012).

**Uses:** The fruits are edible. The roots are powdered and applied on wounds (Brown, 1920).

#### 11. *Ficus altissima* Blume

**Common name:** Council Tree (English)

**Synonyms:** *Ficus altissima* var. *laccifera*; *F. laccifera*; *Urostigma altissimum*; *Urostigma lacciferum*.

**Habit:** Tree

**Distribution:** India, Sikkim, China, Indonesia, Myanmar, Philippines, Thailand, Vietnam, Nepal and Bhutan (Flora of China, 2003; Chaudhary *et. al.*, 2012; Tiwari, *et al.*, 2014).

**Uses:** During the reforestation project in Northern Thailand it was planted as pioneer species to restore native woodland. It produces dense, weed-suppressing crowns and seed-dispersing wildlife, particularly birds and bats when planted in degraded woodland with various fast growing species (Anusarnsunthorn. *et al.*, 2002). Its latex is used to make rubber but of inferior quality as compare to rubber obtained from *F. elastic*.

#### 12. *Ficus glaberrima* Blume

**Common name:** Pakhuri (Nepali)

**Synonyms:** *Ficus feddei*; *F. glaberrima* var.*pubescens*; *F. suberosa*; *Urostigma glaberrimum*.

**Habit:** Tree

**Distribution:** India, Sikkim, China, Thailand, Vietnam, Indonesia, Myanmar, Nepal and Bhutan (Flora of China, 2003; Adrian & Storrs, 1998).

**Uses:** The fruits are edible, foliage are used as fodder and the wood as fuel wood (Upadhyay, 1992; Manandhar, 2002). The plant is also used in Ceremonial (Rijal, 1994; Pokhrel, 1998; Panthi & Chaudhary, 2003).

**13. *Ficus maclellandii* King**

**Common name:** Ali fig, Banana leaf fig (English).

**Synonyms:** *Ficus maclellandii* var. *rhododendrifolia*; *F. rhododendrifolia*; *Urostigma rhododendrifolium*.

**Habit:** Tree

**Distribution:** North East India, Sikkim, China, Bangladesh, Malaysia, Myanmar, Thailand, Vietnam and Bhutan (Flora of China, 2003).

**Uses:** It can be grown as indoor plant and ornamental plant.

**14. *Ficus curtipes* Corner**

**Common name:** Eastern laurel fig (English).

**Synonyms:** *Ficus obtusifolia* Roxburgh.

**Habit:** Tree

**Distribution:** North India, Sikkim, China, Bangladesh, Indonesia, Malaysia, Myanmar, Thailand, Vietnam, Nepal and Bhutan (Flora of China, 2003).

**Uses:** This species is cultivated as an ornamental tree (Flora of China, 2003).

**15. *Ficus auriculata* Lour.**

**Common name:** Roxburgh fig (English); Timila, Nimaro, Bhutuk (Nepali).

**Synonyms:** *Ficus roxburghii* and *Ficus macrophylla*

**Habit:** Tree

**Distribution:** India, Sikkim, China, Myanmar, Thailand, Vietnam, Nepal, Pakistan and Bhutan, (Roder *et al.*, 2003; Flora of China, 2003; Polunin & Stainton, 2006; Adrian & Storrs, 1998; Sundriyal *et al.*, 2004; Rai *et al.*, 2018).

**Uses:** Plant used as fodder and its fruit are edible (Joshi and Ludri, 1996; Sundriyal *et al.*, 2004; Shakya, 1992; Mueller-Boker, 1993; Manandhar & Acharya, 2003). Leaves paste is applied on the wounds, it is also used in diarrhea, dysentery, cholera and vomiting. Stem bark juice is effective for diarrhea, cuts and root latex is used in mumps (Shrestha & Dhillion, 2003; Bhattarai, 1992; Devkota & Karmacharya, 2003; Pant & Pant, 2004).

**16. *Ficus squamosa* Roxb.**

**Common name**

**Synonyms:** *Ficus pyrrhocarpa* and *Ficus saemocarpa*.

**Habit:** Shrub

**Distribution:** India, Sikkim, China, Myanmar, North Thailand, Nepal, Bhutan, (Flora of China, 2003).

**17. *Ficus hispida* L. f**

**Common name:** Hairy fig (English); Kharse (Nepali).



**Habit:** Small Tree

**Synonyms:** *Covellia hispida*, *Ficus compressa*, *Ficus heterostyla*, *Ficus hispida* var. *badiostrigosa*, *Ficus hispida* var. *rubra*, *Ficus letaqui* and *Ficus sambucixylon*.

**Distribution:** India, Sikkim, China, Sri Lanka, Thailand, Vietnam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, New Guinea, Australia, Bhutan and Nepal (Flora of China, 2003; Adrian & Storrs, 1998; Sundriyal *et al.*, 2004).

**Uses:** The fruits are edible and the foliage is used as fodder. The plant is used for earache and fever (Sundriyal *et al.*, 2004; Kumar, 2011; Kunwar, 2002; Manandhar & Acharya, 2003; Murugan, *et al.* 2013). Different parts are used in cough, ulcers, anaemia, piles, fever, jaundice, haemorrhage of the nose and mouth, diseases of the blood and anti-inflammatory (Kirtikar & Basu, 2001, Murugan, *et al.* 2013).

#### 18. *Ficus hirta* Vahl

**Common name:** Khasreto (Nepali) and Hairy Mountain fig (English).

**Synonyms:** *Ficus hibiscifolia*; *F. hirsuta*; *F. hirta* var. *brevipila*; *F. hirta* var. *hibiscifolia*; *F. hirta* var. *imberbis*; *F. hirta* var. *palmatiloba*; *F. hirta* var. *roxburghii*; *F. katsumadae*; *F. palmatiloba*; *F. porteri*; *F. quangtriensis*; *F. roxburghii*; *F. simplicissima* var. *hirta*; *F. tridactylites* and *F. triloba*.

**Habit:** Small Tree

**Distribution:** India, Sikkim, China, Thailand, Vietnam, Indonesia, Myanmar, Nepal and Bhutan (Flora of China, 2003; Tamang & Yonzon, 2004; Sundriyal *et al.*, 2004).

**Uses:** The fruits are edible and it is used for wounds (Kirtikar & Basu, 2001; Manandhar, 2002; Sundriyal *et al.*, 2004). It is used as fodder.

#### 19. *Ficus prostrata* (Wall. ex Miq.) Buch.-Ham. ex Miq.

**Common name:** Fig.

**Synonyms:** *Covellia prostrata* Miq.

**Habit:** Small Tree

**Distribution:** North East India, Sikkim, China, Bangladesh and Vietnam (Flora of China, 2003).

**Uses:** As fodder and as a fuel.

#### 20. *Ficus cyrtophylla* (Wall. ex Miq.) Miq.

**Common name:** Fig.

**Synonyms:** *Covellia cyrtophylla* and *Ficus asymmetrica*

**Habit:** Small Tree

**Distribution:** North India, Sikkim, China, Thailand, Vietnam, Myanmar and Bhutan (Flora of China, 2003).

**Uses:** It is used as fodder and as fuelwood.

**21. *Ficus subulata* Blume**

**Common name:** Fig

**Synonyms:** *Ficus sikkimensis* and *Ficus subulatavar ancolana*.

**Habit:** Shrub

**Distribution:** India, Sikkim, China, Thailand, Indonesia, Malaysia, Myanmar, New Guinea, Nepal and Bhutan (Flora of China, 2003; Tiwari, *et al.*, 2014).

**Uses:** It is also used for making Bonsai, as ornamental plants and as fodder.

**22. *Ficus hederacea* Roxb**

**Common name:** Dudhe lahara (Nepali), Ivy fig (English)

**Synonyms:** *Ficus cantoniensis*, *F. scandens*.

**Habit:** Climber

**Distribution:** North India, Sikkim, China, Thailand, Laos, Myanmar, Bhutan and Nepal (Flora of China, 2003; Tiwari, *et al.*, 2014).

**Uses:** It is used as Fodder (Manandhar, 2002).

**23. *Ficus sagittata* Vahl**

**Common name:** Variegated Rooring fig (English).

**Synonyms:** *Ficus compressicaulis*, *F. lanaoensis*, *F. ramentacea*.

**Habit:** Tree

**Distribution:** India, Sikkim, China, Thailand, Vietnam, Indonesia, Myanmar, Philippines, Pacific Islands and Bhutan (Flora of China, 2003; Tiwari, *et al.*, 2014).

**Uses:** It is used as fodder and as fuelwood.

**24. *Ficus pubigera* var. *maliformis* (King) Corner**

**Common name:** Khasi fig (English).

**Synonyms:** *Ficus foveolata* var. *maliformis*, *Ficus foveolata* var. *oleiformis*.

**Habit:** Shrub

**Distribution:** North East India, Sikkim, China, Myanmar, Bhutan (Flora of China, 2003).

**Uses:** It is used as fodder and as fuelwood.

**25. *Ficus sarmentosa* Buch.-Ham. Ex Sm.**

**Common name:** Berulo, Gai berulo, Bantimila (Nepali).

**Synonyms:** *Ficus foveolata*; *F. reticulata*; *Pogonotrophe foveolata*; *P. reticulata*.

**Habit:** Shrub

**Distribution:** India, Sikkim, China, Bhutan, Myanmar and Nepal (Flora of China, 2003; Tamang & Yonzon, 2004).

**Uses:** Fruits are edible. Bark powder are used for boils and for secretion of more milk during delivery and root extract for malaria (Manandhar, 2002)

## 26. *Ficus heterophylla* L.f

**Common name:** Fig.

**Synonyms:** *Ficus heterophylla* var. *scabrella*; *F. scabrella*; *Ficus heterophylla* var. *scabrella*.

**Habit:** Shrub

**Distribution:** Sikkim, India, China, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand and Vietnam (Flora of China, 2003; (ENVIS, 2011 and Flora of Bhutan, 1983).

**Uses:** Fruit are edible. The leaf paste is applied on area affected by rheumatism or on ear infections (Rahman, *et al.*, 2007). The juice of the root is useful in colic pain. The bark of the roots, which is very bitter, is taken for the treatment of cough & asthma after pulverizing and mixing it with coriander seeds. The extract of the leaves with milk is useful in dysentery. The leaves are also used as sand paper. The fruits are eaten by local people (Kirtikar & Basu, 2001).

## 27. *Ficus geniculata* Kurz

**Common name:** Common Fig Tree and Anjiir.

**Synonyms:** *Ficus geniculata* var. *abnormalis*.

**Habit:** Tree

**Distribution:** Sikkim, India, China, Cambodia, Laos, Myanmar, Thailand, Vietnam and Nepal (Flora of China, 2003 and Tiwari, *et al.*, 2014).

**Uses:** The young twig with leaf can be eaten and also used for traditional treatment of various gynecological problems by women folks residing in Manipur (Devi. *et al.*, 2015).

## 28. *Ficus concinna* (Miq.) Miq

**Common name:** Elegant Fig (English)

**Synonyms:** *Urostigma concinnum*; *Ficus affinis*; *F. concinna* var. *Subsessilis* Corner; *F. fecundissima*; *F. glabella* var. *affinis*; *F. glabella* var. *concinna*; *F. parvifolia*; *F. pseudoreligiosa*; *F. subpedunculata* and *Urostigma parvifolium*.

**Habit:** Tree

**Distribution:** Sikkim, India, China, Thailand, Vietnam, Laos, Malaysia, Myanmar, Philippines and Bhutan (Flora of China, 2003; Tiwari, *et al.*, 2014).

**Uses:** It is used as fodder. The wood is used as fuelwood.

**29. *Ficus microcarpa* L. f.**

**Common name:** Golden fig (English).

**Synonyms:** *Ficus amblyphylla*; *F. cairnsii*; *F. condaravia*; *F. littoralis*; *F. microcarpa* var. *crassifolia*; *F. microcarpa* var. *fuyensis*; *F. microcarpa* var. *oluangpiensis*; *F. microcarpa* var. *pusillifolia*; *F. retusa* Linnaeus var. *crassifolia*; *F. retusifolia*; *F. rubra*; *Urostigma amblyphyllum*.

**Habit:** Tree

**Distribution:** Sikkim, India, Malaysia, Myanmar, New Guinea, Thailand, Vietnam, China, Sri Lanka, Nepal and Bhutan (Flora of China, 2003. Adrian & Storrs, 1998).

**Uses:** Cultivated in China as a shade tree (Flora of China, 2003). A fiber from the bark is made into cloth. Its latex is used for caulking boots and waterproofing. The wood, its aerial roots, is used for light construction, tool making and as fuel wood (Clarke & Thaman, 1993).

**30. *Ficus pumila* L.**

**Common name:** Creeping fig or Climbing fig (English).

**Synonyms:** *Ficus hanceana*; *Ficus scandens*, *F. stipulate*.

**Habit:** Climber

**Distribution:** Sikkim, India, China, Vietnam, Taiwan, Japan, Korea, Nepal and Bhutan (Flora of China, 2003; Chaudhary, 2012; ENVIS, 2011 and Flora of Bhutan, 1983).

**Uses:** It is used as an ornamental plant. The leaves are used in the treatment of dysentery, haematuria and skin diseases (Quisumbing, 1951).

**31. *Ficus nervosa* Heyne ex Roth**

**Common name:** Fig.

**Synonyms:** *Ficus apoensis*; *F. blinii*; *F. magnoliifolia*; *F. modesta*; *F. nervosa* var. *longifolia*; *Urostigma modestum*; *U. nervosum*.

**Habit:** Tree

**Distribution:** India, Sikkim, China, Myanmar, Thailand, Vietnam, Nepal, Sri Lanka and Bhutan (Tiwari, *et al.*, 2014; Flora of China, 2003).

**Uses:** In Sri Lanka it is grown under shades during the coffee plantation.

**32. *Ficus benghalensis* L.**

**Common Name:** Banyan tree (English); Kungiyi (Lepcha); Bar (Nepali)

**Synonyms:** *Ficus indica*, *Urostigma benghalensis*

**Habit:** Tree

**Distribution:** Sikkim, India, Nepal, Bangladesh, Malaysia, Pakistan, Sri Lanka (Flora of Bhutan, 1983; Adrian &

Storrs, 1998; Tamang, & Yonzon, 2004; Sundriyal, *et al.*, 2004; Polunin, & Stainton, 2006; Singh, 2007; Chaudhary. *et al.*, 2012; Rai *et al.*, 2018; ENVIS, 2011).

**Uses:** The fruits are edible (Sundriyal, *et al.*, 2004; Murugan, *et al.*, 2013), leaves used as fodder, fuelwood and during ceremonial (Manandhar, 1972; Srivastava, 1976; Ghimire *et al.*, 2000). The plant is used for diarrhea, piles, dysentery, diabetes, cuts, wounds, cold, cough, asthma, gum swelling, gonorrhea, snake bite, joint pain, cracked heel and toe and its stem bark is used as antihelminthic (Govil *et al.*, 1993, Sarkar, 1994; Siwakoti & Varma, 1996; Tripathi *et al.*, 2015). The leaves are good for ulcers and leprosy (Kirtikar & Basu, 2001)

### 33. *Ficus arnottiana* (Miq.) Miq

**Common name:** Indian rock fig, wild peepal

**Synonyms:** *Urostigma arnottianum*.

**Habit:** Small Tree

**Distribution:** Throughout India including Andaman and Nicobar (Pandey & Diwakar, 2008; Tiwari *et al.*, 2014).

**Uses:** It is used as fodder (Murugan *et al.*, 2013). The root of the plant acts as astringent (Bakshi, *et al.*, 2001) and the leaf extract has antiulcer activity (Gregory *et al.*, 2009). The fruit of the plant contains glucoacetate,  $\beta$ -sitosterol, glucose and friedelin (Chopra, *et al.*, 1996). The bark is used for skin disease, diabetes, burning sensation, vaginopathy, inflammation and diarrhea. (Murugan, *et al.*, 2013).

### 34. *Ficus fistulosa* Reinw. ex Blume

**Common name:** Common Yellow Stem Fig (English).

**Synonyms:** *Ficus harlandii* Benth.

**Habit:** Small Tree

**Distribution:** North East India, Sikkim and Darjeeling, China, Bangladesh, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam, (Flora of Bhutan, 1983; Flora of China, 2003; ENVIS, 2011).

**Uses:** Fruit is edible, eaten as salad. Mature leaves are used as a narcotic, can be smoked with opium (Ramirez, 1977; King, 1888). The wood is used for fuelwood (Ramirez, 1977).

### 35. *Ficus racemosa* L

**Common name:** Cluster fig - English; Dumri, Gular –(Nepali).

**Synonyms:** *Ficus glomerata*; *F. goolerea*; *Covellia glomerata*.

**Habit:** Tree

**Distribution:** India (almost throughout from the outer Himalaya to plains and low hills), Sikkim, Nepal, Pakistan, Sri Lanka, Australia, Bangladesh, China, Indochina, Malaysia and Myanmar (Flora of Bhutan, 1983; Adrian & Storrs, 1998; Tamang, & Yonzon, 2004; Sundriyal *et al.*, 2004; Upadhyay & Srivastava, 2010; Chaudhary *et al.*, 2012, ENVIS, 2011).

**Uses:** Fruit is edible, foliage used as fodder and plant is used in ceremonial (Manandhar, 1972; Sundriyal *et al.*, 2004; Berg & Corner, 2005). It is used for burns, swelling, leucorrhoea (King 1887-1888), diarrhea, dysentery, and used as astringent (Kirtikar & Basu, 2001; Tiwari, 2001). The ripe fruit is useful in blood diseases, biliousness, burning sensations, fatigue, urinary discharges, thirst, leprosy, menorrhagia, nose bleeding, chronic bronchitis, dry cough, loss of voice, diseases of the kidney and spleen and in the preparation of cold jelly. Root is useful in hydrophobia, dysentery and diabetes. The bark is used in asthma and piles and as a wash for wounds also. The unripe fruit is useful in cough, biliousness, leucorrhoea and blood diseases (Upadhyay & Srivastava, 2010; Kumar, 2011).

### 36. *Ficus inctoria* G. Forst

**Common name:** Dye Fig, Humped Fig (English).

**Synonyms:** *Ficus gibbosa*; *F. cuspidifera*; *F. gibbosa* var. *cuspidifera*; *F. gibbosa* var. *parasitica*; *F. gibbosa* var. *rigida*; *F. micheli*; *F. parasitica* Willdenow; *F. pseudobotryoides*; *F. reticulata*; *F. rhomboidalis*; *F. tinctoria* subsp. *parasitica*.

**Habit:** Shrub

**Distribution:** Sikkim, India, China, Bhutan, Nepal, Indonesia, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam and Australia (Flora of Bhutan, 1983; Flora of China, 2003; ENVIS, 2011).

**Uses:** Fruit is edible. The plant juice is used for dressing broken bones. The fiber from the bark is made into cordage (Uphof, 1959). The red dye is obtained from its sap which is used to paint faces. A red dye is obtained from the root which is used to colour cloth (Clarke & Thaman, 1993).

**Table 2: Distribution of *Ficus* Species across the Elevation Gradient in Sikkim**

Species	Altitudinal range (m asl)																				
	Tropical					Sub-tropical					Temperate					Subalpine		Alpine			
	0-200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	
<i>Ficus altissima</i>																					
<i>Ficus arnottiana</i>																					
<i>Ficus auriculata</i>																					
<i>Ficus bengalensis</i>																					
<i>Ficus benjamina</i>																					
<i>Ficus conchata</i>																					
<i>Ficus crumphi</i>																					
<i>Ficus curtipes</i>																					
<i>Ficus drupacea</i>																					
<i>Ficus elastica</i>																					
<i>Ficus filiculosa</i>																					
<i>Ficus geniculata</i>																					
<i>Ficus glaberrima</i>																					
<i>Ficus heterophylla</i>																					
<i>Ficus hirta</i>																					
<i>Ficus hispida</i>																					
<i>Ficus hookeriana</i>																					
<i>Ficus maclelandii</i>																					
<i>Ficus microcarpa</i>																					
<i>Ficus nervifolia</i>																					
<i>Ficus nervosa</i>																					
<i>Ficus prostrata</i>																					
<i>Ficus pubigera</i>																					
<i>Ficus pumila</i>																					
<i>Ficus racemosa</i>																					
<i>Ficus religiosa</i>																					
<i>Ficus rumphii</i>																					
<i>Ficus sagittata</i>																					
<i>Ficus sarmentosa</i>																					
<i>Ficus semicordata</i>																					
<i>Ficus squamosa</i>																					
<i>Ficus subulata</i>																					
<i>Ficus tinctoria</i>																					
<i>Ficus virens</i>																					

## 5. CONCLUSIONS

A list of different types of *Ficus* species found in Sikkim has been prepared. A total of 115 taxa have been categorised out of which 36 species have been recorded in Sikkim according to the accessible information and published records. *Ficus*

*species* plays an important role in supporting the lives of common people by providing edible products, as fodder, medicine and as religious value. All the species provided with their nomenclature, taxonomy, synonyms, distribution and uses has been examined.

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